

REMARKS

Claims 1-3, 5 and 8, 9, and 12-16 are now pending in the application. Claims 4, 6, 7, 10 and 11 have been cancelled. The Examiner is respectfully requested to reconsider and withdraw the rejection(s) in view of the amendments and remarks contained herein.

CLAIM OBJECTIONS

Claims 1-8 are objected to for informalities.

Applicant has amended claims 1-3, 5 and 8 as suggested by the Examiner and cancelled claims 4, 6 and 7.

Therefore, reconsideration is respectfully requested.

REJECTION UNDER 35 U.S.C. § 112

Claim 4 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point and distinctly claim the subject matter which Applicant regards as the invention. This rejection is respectfully traversed.

Applicant has cancelled claim 4 thereby rendering this rejection moot. Reconsideration is, therefore, respectfully requested.

REJECTION UNDER 35 U.S.C. § 102

Claims 1, 3, 5, 6, 8, 9 and 10 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Schilling (U.S. Pat. No. 6,396,824).

The Examiner states that Schilling '824 relates to a spread-spectrum CDMA communications system and method for locating remote units and for communication message data between a plurality of remote units and a base station, comprising a data channel which is modulated message data signal and a separate spread-spectrum channel as a pilot signal, the pilot channel is not modulated by the message data. The method comprising the step of combining the base generic chip code signal (a pilot signal) with the spread-spectrum processed base message data to generate a CDMA signal to be transmitted in which the carrier frequency is f_0 . A mixer uses the replica of the pilot signal for despreading the CDMA signal and a message mixer uses the replica of the data signal for despreading the CDMA signal. A detector demodulates the modulated data signal to get the message data. Schilling describes that the despreading using the pilot signal produces the recovered carrier signal and the detector uses the recovered carrier signal.

As the Examiner is no doubt aware, a rejection under 35 U.S.C. §102(b) can only be maintained if a single reference teaches each and every element of the claims. If there are any differences whatsoever between the reference and the claim(s), the rejection cannot be based on 35 U.S.C. §102. Titanium Metals Corp. v. Banner, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985).

Applicant's invention generally relates to a method for the demodulation of radio navigation signals transmitted in spread spectrum and comprising a data channel which is modulated by a navigation message and a pilot channel which is not modulated by a navigation message, the data channel and the pilot channel being combined into one multiplexing scheme in order to modulate a carrier. This method also requires

subjecting the signals of the pilot and data channels to a despreading processing and in demodulating the despread data signal in order to obtain the navigation message. According to the specific features of the invention, the demodulation of the despread data signal used to obtain the navigation message is performed with the aid of the carrier obtained from the despreading processing of the pilot channel.

Applicant respectfully submits that Schilling '824 does not teach that the despreading processing is performed by code tracking with the aid of a delay-lock loop (DLL) and the carrier processing is performed with the aid of a frequency-lock loop (FLL).

Applicant has amended claim 1 by introducing the features of claim 6 and 7 to address this rejection. As Schilling '824 does not teach each and every element of claim 1 as amended, reconsideration of the present rejection is respectfully requested.

REJECTION UNDER 35 U.S.C. § 103

Claim 2 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Schilling (U.S. Pat. No. 6,396,824) in view of Clapp (U.S. Pat. No. 5,943,248).

The Examiner contends that Schilling '824 discloses the combiner may be a nonlinear combiner and that Clapp '248 discloses a nonlinear signal combination and that it would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Schilling, and to have time multiplexed data channel and pilot channel, as taught by Clapp, thus allowing for hardware efficient signal combination, as discussed by Clapp.

This rejection is respectfully traversed.

In addition, Applicant respectfully submits that the amendment to claim 1 as now presented herein has rendered the rejection moot. Applicant submits that one of ordinary skill in the art would not have looked to Clapp to address deficiencies in the teaching of Schilling.

Claims 7, 11 and 16 are rejected under 35 USC 103(a) as being unpatentable over Schilling (US 6,396,824) in view of Thomas et al (US 6,711,219).

The Examiner contends that Thomas et al. '219 concerns an architecture for a Coded Signal processing Engine (CSPE) that is designed for interference cancellation in the reception of coded signals, (CSPE) and may be used for acquiring, tracking and demodulating pseudorandom (PN) coded signals in the presence of interference from other PN coded signal in a CDMA system.

According to Thomas '219, the tracking module comprises two or more coupled tracking loops, the function of carrier tracking loop is to track the phase **and** the frequency of the incoming carrier using a PLL for the phase **and** a FLL for the frequency. For data demodulation, the tracking module uses a phase-lock loop (PLL) **and** a frequency-lock loop (FLL) as well as a delay lock loop (DLL). (col 17 line 65 – col 18 line 10).

This rejection is traversed.

As to claims 7 and 11, the rejection has been rendered moot by cancellation of these claims.

As to claim 16, in addition to the arguments presented above with regard to Schilling '824, Applicant notes that the invention as now claimed under claim 9, from which claim 16 now depends, utilizes a carrier tracking processing performed only with the aid of

a frequency-lock loop (FLL). It is not necessary to reconstruct the phase of the carrier. It is therefore no longer necessary to use a phase-lock loop (PLL). The receiver can comprise only an FLL loop for tracking the carrier, thus simplifying the architecture of the receiver while offering greater robustness than a PLL loop.

Therefore, the purpose of Applicant's amended claims 1 and 9 are inventive in terms of Schilling '824 or Thomas '219 or their combinations. Reconsideration of the rejection is therefore respectfully requested.

Claims 12 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Schilling (U.S. Pat. No. 6,396,824) in view of Thomas et al. (U.S. Pat. No. 6,711,219), as applied to claim 11 above, and further in view of Lloyd et al (U.S. Pat. No. 7,183,971).

The Examiner contends that Thomas '219 discloses the receiver as claimed in claim 11 above, while Schilling '824 does not disclose that the frequency-lock loop (FLL) comprises a discriminator of extended arctangent form. The Examiner further contends that Lloyd teaches a frequency-lock loop (FLL) comprising a discriminator of extended arctangent form and that it would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Schilling and to have FLL with a discriminator of extended arctangent form as taught by Lloyd, thus allowing for a broad range of selection of the loop updated rate, as discussed by Lloyd.

For the reason noted above with regard to Schilling '824, this rejection is also traversed.

Applicant submits that the purported combination still fails to teach or disclose, alone or in combination, a method whereby the despread processing is performed by code tracking with the aid of delay-lock loop (DLL) and the carrier processing is performed with the aid of frequency lock loop (FLL). Thus, reconsideration is respectfully requested.

Claim 14 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Schilling (U.S. Pat. No. 6,396,824) in view of Thomas et al. (U.S. Pat. No. 6,711,219), as applied to claim 11 above, and further in view of David (U.S. Pat. No. 6,538,599).

The Examiner contends that Schilling '824 in view of Thomas '219 discloses the receiver as claimed in claim 11 above; but Schilling does not disclose that the output of the filter of the frequency-lock loop (FLL) is coupled to the delay-lock loop (DLL) and the delay-lock loop comprises a zero-order loop filter.

The Examiner contends that it would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Schilling and to have the output of the filter of the frequency-lock loop (FLL) coupled to the delay-lock loop (DLL) as taught by Thomas, thus allowing for simultaneous cross-channel and co-channel interference mitigation, as discussed by Thomas.

The Examiner further contends that David '599 teaches using a zero-order filter and that it would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Schilling, to have a zero-order filter thus allowing for achieving further processing gains as discussed by David.

Applicant submits that the rejection of claim 14 cannot stand wherein the above-noted combination is not applicable. Since independent claim 9 should now be in a condition for allowance, claim 14 is also allowable.

Reconsideration is requested.

Claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Schilling (U.S. Pat. No. 6,396,824) in view of Thomas et al. (U.S. Pat. No. 6,711,219), as applied to claim 11 above, and further in view of Kowalski (U.S. Pat. No. 6,470,044).

The Examiner contends that Schilling '814 in view of Thomas '219 discloses the receiver as claimed in claim 11 above and that Kowalski '044 teaches a delay-lock loop (DLL) that comprises a discriminator which is applied to a pilot signal and to a data signal, the data signals being weighted by a coefficient which depends on the signal-to-noise density ratio of the receiving signals, and that it would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Schilling, and to have the delay lock loop comprising a discriminator which is applied to the pilot signal and to the data signal, the data signal being weighted by a coefficient which depends on the signal to noise spectral density ratio of the receiving signals as taught by Kowalski, thus allowing for maximizing signal to noise ratio in the presence of colored noise, as discussed by Kowalski.

Applicant submits that the rejection of claim 15 cannot stand wherein the above-noted combination is not applicable. Since independent claim 9 as amended, is now in a condition for allowance, claim 15 is also allowable.

Reconsideration is requested.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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